TABLE 2.—*Vapor pressure at pyrheliometric stations on days when solar radiation intensities were measured.*

Washington, D. C.			Madison, Wis.			Lincoln, Nebr.			Santa Fe, N. Mex.		
Date.	8 a. m.	8 p. m.	Date.	8 a. m.	8 p. m.	Date.	8 a. m.	8 p. m.	Date.	8 a. m.	8 p. m.
1916.	*Mm.*	*Mm.*	1916.	*Mm.*	*Mm.*	1916.	*Mm.*	*Mm.*	1916.	*Mm.*	*Mm.*
Mar. 4	0.152	0.300	Mar. 3	0.096	0.079	Mar. 3	0.079	0.226	Mar. 3	0.160	0.206
5	.315	.132	7	.168	.262	6	.536	.381	4	.262	.345
8	.345	.206	8	.124	.145	7	.330	.262	7	.196	.196
9	.137	.168	10	.168	.178	10	.300	.226	10	.381	.287
11	.160	.168	15	.107	.137	11	.274	.627	11	.399	.226
13	.381	.602				13	.417	.516	14	.178	.102
16	.132	.137				17	.330	.536	15	.226	.206
17	.249	.145				18	.437	.363	16	.196	.152
18	.102	.188				22	.437	.315	17	.160	.216
20	.168	.178				27	.345	.417	27	.274	.206
23	.249	.249				28	.417	.536			
31	.475	.627									

Table 3 shows that at Washington the total solar and sky radiation was considerably below the normal during the first and third decades of March, and somewhat above normal during the second decade. The deficiency for the month is 12.6 per cent of the average March radiation, and the deficiency since the first of the year is 9.6 per cent of the average.

While, therefore, during the first three months of 1916 direct solar radiation intensities with clear skies have been fully equal to the average for the season, at Washington the total radiation has shown a deficiency, due to more than the average cloudiness.

TABLE 3.—*Daily totals and departures of solar and sky radiation at Washington, D. C., during March, 1916.*

[Gram-calories per square centimeter of horizontal surface.]

Day of month.	Daily totals.	Departures from normal.	Excess or deficiency since first of month.
1916.	*Gr.-cal.*	*Gr.-cal.*	*Gr.-cal.*
Mar. 1	319	12	12
2	224	− 86	− 74
3	102	−211	− 285
4	414	98	− 187
5	442	123	− 64
6	57	−264	− 328
7	205	−119	− 447
8	301	− 25	− 472
9	485	156	− 316
10	92	−239	− 555
Mar. 11	516	182	− 373
12	333	− 3	− 376
13	273	− 66	− 442
14	283	− 58	− 500
15	35	−308	− 808
16	505	159	− 649
17	526	178	− 471
18	327	− 23	− 494
19	467	114	− 380
20	507	152	− 228
Decade departure			327
Mar. 21	216	−141	− 369
22	70	−290	− 659
23	536	164	− 495
24	311	− 53	− 548
25	374	8	− 540
26	435	66	− 474
27	76	−295	− 769
28	56	−317	−1,086
29	70	−305	−1,391
30	267	−111	−1,502
31	536	156	−1,346
Decade departure			−1,118
Deficiency since first of year: Gram-calories			2,247
Per cent			9.6

CONVECTION IN UPPER REGIONS OF SUN'S ATMOSPHERE.[1]

By F. HENROTEAU.

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From a study of spectroheliograms taken with sufficiently high dispersion to separate the higher layers of the solar atmosphere Deslandres has shown that the filaments often group themselves on a curve encircling the pole at distances varying from 50° to 70° heliographic latitude. These polar curves of filaments are in general more developed in the hemisphere, or on the meridians, where spots and faculæ are relatively feeble, and appear to be more pronounced in years of minimum spot activity. Further, they show evidence of being in general ascending currents while the spots and faculæ are regions of descent of the vapors concerned. The present author examines the evidence for detecting any existent convection currents which might be produced as the result of this difference of atmospheric pressures. Visual observations of faculæ provide some confirmation. Other verification is furnished by the motions of prominences recorded by Slocum from measurements of photographs taken with the Yerkes spectro-heliograph. At mean latitudes there is a tendency of movement toward the poles; in high latitudes the movement is generally toward the Equator. Reproductions of drawings of spots and faculæ, made at Stonyhurst are included to illustrate the phenomena described.—*C. P. B[utler]*.

SEESAW OF PRESSURE, TEMPERATURE, AND WIND VELOCITY BETWEEN WEDDELL SEA AND ROSS SEA.[2]

By R. C. MOSSMANN.

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Four years' data are discussed in three-months groups. The observations refer to M'Murdo Sound (Ross Sea) on the one hand and to stations in the South Orkneys and Grahams Land (Weddell Sea) on the other. The difference in longitude between the two districts is about 120°. It is found that seasonal departures from the normal of barometric pressure are of opposite sign in the two areas, out of the 16 seasons discussed there being only 3 in which the divergences are of the same sign. The wind-velocity variations show a similar seesaw effect. As regards temperature there is pronounced opposition in the departures for the winter season, but for the other periods of the year the results are indefinite. In the later part of the paper conditions at M'Murdo Sound are compared with those at stations in temperate latitudes widely separated from it, and certain similarities and oppositions in the fluctuations are found. Great changes occur from year to year or between groups of years in the Antarctic circulation. Thus the mean wind velocity in M'Murdo Sound during Scott's first expedition (1902–1904) was only half that recorded during the second expedition (1911–12), and from the Weddell Sea data it appears that storms were frequent and violent from 1902 to 1906, while from 1907 to 1914 few have been experienced.—*J. S. D[ines]*.

[1] *See* Mo'ly. notices, Roy. astron. soc., Nov., 1915, 76: 18–22.
[2] *See* Proc. Roy. soc. Edinburgh, 1914–15, 35: 203–216.